Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

1. (Previously Presented) A catalyst system for use in reducing emissions from an exhaust gas stream containing hydrocarbons, CO and NOx comprising:

a first lean NOx trapping catalyst for optimizing the storage of NOx emissions under lean air/fuel ratios, comprising a first zone and a second zone, wherein the first zone is positioned upstream of the second zone;

said first zone comprising a) a catalyst mixture PM-Rh, where PM is a catalyst material selected from the group consisting of Pt, Pd and combinations thereof, and b) a metal oxide selected from the group consisting of oxides of aluminum, alkali metals, alkaline-earth metals, and combinations thereof, wherein said first zone is devoid of cerium;

said second zone comprising a) a catalyst mixture PM-Rh, where PM is a catalyst material selected from the group consisting of Pt, Pd and combinations thereof, and b) a metal oxide selected from the group consisting of alkali metals, alkaline earth metals, rare earth metals and combinations thereof; and

a second catalyst for optimizing the reduction of hydrocarbon, NOx and CO emissions under stoichiometric air/fuel ratios comprising: a) a catalyst mixture PM-Rh, where PM is a catalyst material selected from the group consisting of Pt, Pd and combinations thereof, b) a metal oxide selected from the group consisting of oxides of aluminum, alkali metals, alkaline earth metals and combinations thereof, and c) a metal oxide selected from the group consisting of oxides of zirconium, cerium and combinations thereof.

2. (Original) The catalyst system of claim 1, wherein said second zone of said first catalyst further comprises zirconium oxide.

3. (Original) The catalyst system of claim 1, wherein said second catalyst further comprises hydrogen sulfide emission suppressants.

4. (Original) The catalyst system of claim 1, wherein said second catalyst further comprises nickel oxide.

5. (Original) The catalyst system of claim 1, wherein said Rh in said first catalyst is placed on ZrO2 particles of 3-5% (wt).

6. (Original) The catalyst system of claim 1, wherein said catalyst mixtures of said first and second catalysts are coated on an alumina substrate.

7. (Original) The catalyst system of claim 6, wherein said alumina substrate in said first zone is stabilized by between 1-8% (wt) La2O3.

8. (Original) The catalyst system of claim 6, wherein said alumina substrate in said second catalyst is stabilized by 2-15% (wt) BaO.

9. (Original) The catalyst system of claim 1, wherein said first zone of said first catalyst further comprises a metal oxide selected from the group consisting of barium oxide, magnesium oxide, potassium oxide and combinations thereof, wherein the metal oxide comprises 2-15% (wt).

10. (Original) The catalyst system of claim 1, wherein said second zone of said first catalyst further comprises a metal oxide selected from the group consisting of barium oxide, magnesium oxide and combinations thereof.

11. (Original) The catalyst system of claim 10, wherein said second zone of said first catalyst comprises BaO and MgO of 10-40% (wt).

12. (Original) The catalyst system of claim 1, wherein said catalyst mixture PM-Rh in said first zone of said first catalyst comprises Pt and Rh in a ratio of between 5:1 and 25:1.

13. (Original) The catalyst system of claim 1, wherein said catalyst mixture PM-Rh in said first zone of said first catalyst has a loading of between 60-300 g/ft3.

14. (Original) The catalyst system of claim 1, wherein said second zone of said first catalyst comprises Pt and Rh in a ratio of between 1:1 and 10:1.

15. (Original) The catalyst system of claim 1, wherein said catalyst mixture PM-Rh in said second zone of said first catalyst has a loading of between 10-100 g/ft3.

16. (Original) The catalyst system of claim 1, wherein said catalyst mixture PM-Rh in said second catalyst comprises Pt and Rh in a ratio of between 5:1 and 15:1.

17. (Original) The catalyst system of claim 1, wherein said catalyst mixture PM-Rh in said second catalyst has a loading of between 10-120 g/ft3.

18. (Original) The catalyst system of claim 1, wherein PM-Rh in said second catalyst comprises Pt and Rh placed on Ce and Zr particles of 5-30% (wt) wherein the molar ratio of Ce and Zr is 50:50.

19. (Original) The catalyst system of claim 1, wherein said first catalyst and said second catalyst are close-coupled, said first catalyst being positioned in a forward position and said second catalyst being positioned in a downstream position.

20. (Original) The catalyst system of claim 1, wherein an exhaust gas sensor is placed between said first and second catalysts.

21. (Currently Amended) A catalyst system for use in reducing emissions from an exhaust gas stream containing hydrocarbons, CO and NOx comprising:

a first <u>lean NOx trapping</u> catalyst for optimizing the storage of NOx emissions under lean air/fuel ratios comprising a top layer and a bottom layer;

said top layer comprising a) a catalyst mixture PM-Rh, wherein said PM is a catalyst material selected from the group consisting of Pt and Pd and combinations thereof, and b) a metal oxide selected from the group consisting of oxides of aluminum, alkali metals, alkaline earth metals and combinations thereof, wherein said top layer is devoid of cerium;

said bottom layer comprising a) a catalyst mixture comprising PM-Rh wherein PM is a catalyst material selected from the group consisting of Pt, Pd and combinations thereof, and b) a metal oxide selected from the group consisting of oxides of aluminum, alkali metals, alkaline earth metals and combinations thereof; and

a second catalyst for optimizing the reduction of hydrocarbon, NOx and CO emissions under stoichiometric air/fuel ratios comprising a) a catalyst mixture PM-Rh, where PM is a catalyst material selected from the group consisting of Pt, Pd and combinations thereof, and b) a metal oxide selected from the group consisting of oxides of aluminum, alkali metals, alkaline earth metals and combinations thereof, and c) a metal oxide selected from the group consisting of oxides of zirconium, cerium, and combinations thereof.

22. (Original) The catalyst system of claim 21, wherein said top layer of said first catalyst comprises Pt and Rh in a ratio of between 5:1 and 25:1.

23. (Original) The catalyst system of claim 21, wherein said catalyst mixture PM-Rh in said top layer of said first catalyst has a loading of between 60-300 g/ft3.

24. (Original) The catalyst system of claim 21, wherein said catalyst mixture PM-Rh in said top layer of said first catalyst comprises Pt-Rh stabilized by 2-15 wt% of BaO.

25. (Original) The catalyst system of claim 21, wherein said Rh in said second bottom layer of said first catalyst is placed on ZrO2 particles of 3-5% (wt) and BaO and MgO particles of 2-30% (wt).

26. (Original) The catalyst system of claim 21, wherein said catalyst mixtures of said first and second catalysts are coated on an alumina substrate.

27. (Original) The catalyst system of claim 26, wherein said alumina substrate in said bottom layer of said first catalyst is stabilized by between 2-8% (wt) La2O3.

28. (Original) The catalyst system of claim 26, wherein said alumina substrate in said bottom layer of said first catalyst is stabilized by composite oxides of cerium-lanthanum.

29. (Original) The catalyst system of claim 21, wherein said catalyst mixture PM-Rh in said second catalyst comprises Pt and Rh in a ratio of between 5:1 and 15:1 with a total loading of between 10-120 g/ft3.

30. (Original) The catalyst system of claim 21, wherein PM-Rh in said second catalyst comprises Pt and Rh placed on Ce and Zr particles of 5-30 wt%, wherein the molar ratio of Ce and Zr is 50:50.

31. (Currently Amended) A catalyst for use with an internal combustion engine to provide emission reductions, comprising:

a first zone for optimizing the reduction of hydrocarbon, NOx and CO emissions under stoichiometric air/fuel ratios and a second NOx trapping zone for optimizing NOx reductions under lean air/fuel ratios;

said first zone comprising a) a catalyst mixture PM-Rh where PM is a catalyst material selected from the group consisting of Pt, Pd and combinations thereof, and b) a metal oxide selected from the group consisting of cerium, zirconium and combinations thereof; and

said second zone comprising a) a catalyst mixture PM-Rh, where PM is a catalyst material selected from the group consisting of Pt, Pd and combinations thereof; and b) a metal selected from the group consisting of oxides of aluminum, alkali metals, alkaline earth metals and combinations thereof, wherein said second zone is devoid of cerium to minimize the release of unreduced NOx.

32. (Currently Amended) A catalyst for use with an internal combustion engine to provide emission reductions, comprising:

a first zone for optimizing the reduction of hydrocarbon, NOx and CO emissions under stoichiometric air/fuel ratios, a second NOx trapping zone for optimizing NOx reduction under lean air/fuel ratios, and a third zone to minimize hydrogen sulfide emissions, said first zone comprising a) a catalyst mixture PM-Rh where PM is a catalyst mixture selected from the group consisting of Pt, Pd and combinations thereof, and b) a metal oxide selected from the group consisting of cerium, zirconium and combinations thereof;

said second zone comprising a) a catalyst mixture Pm-Rh, where PM is a catalyst material selected from the group consisting of Pt, Pd and combination thereof; and b) a metal selected from the group consisting of oxides of aluminum, alkali metals, alkaline earth metals and combinations thereof, wherein said second zone is devoid of cerium; and

said third zone comprising a) a hydrogen sulfide suppressant, b) a catalyst mixture PM-Rh where PM is a catalyst material selected from the group consisting of Pt, Pd and combinations thereof, and c) a metal oxide selected from the group consisting of cerium, zirconium and combinations thereof.